to 3. 25, without any remainder, then the Author has sq
Circle: but this his first Postulatum wants proving.

733c
1

THE CIRCLE *SQUAR'D*:

OR,

AN EASY, EXACT, PLAIN and COMPENDIOUS METHOD of Finding THE Exact *Areas* of all *Circles*, AND *CIRCULAR BODIES*,

By MEANS of the Due Proportion of the *Diameter of a Circle* to its *Circumference*; and the *Square Root* extracted without any *Remainder*.

Never heretofore Published.

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MVSEVM
BRITAN
NICVM

THE

PREFACE.

IT would be needleſs, in an Age ſo capable of *Diſcerning*, to ſay any thing of a Work of this Nature, which carries its own *Evidence* at firſt Sight along with it, did not *Cuſtom* determine in Favour of a *Preface*, and the *Novelty* of the

Project render it ſomewhat neceſſary. I underſtand that ſome *Criticks* have already paſt their Verdict upon this Book, affirming, that it were better obliterated, than publiſhed: *Becauſe*, ſay they, *many eminent learned Men have laboured very much, in order to find out the due Proportion of the Diameter of a Circle to the Circumference; but it was never yet exactly found;* therefore believe it impoſſible. To whom I anſwer, *That their Aſſertion is frivolous, and the Reaſons thereof ridiculous*: For, had never any Age made an Improvement in *Learning*, then the *Preſent*

Preſent Age muſt have known no more than thoſe who lived a thouſand Years ago. Do not theſe *Cenſorious Criticks* know, that *Truth*, tho' comely in it ſelf, is yet more lovely, when compared with *Falſe-hood?* How ſhould we know the Excellency of *Light*, if there were no *Darkneſs*? The *Deficiency*, or *Fallacy*, of the *Proportions* (heretofore publiſhed) of a *Circle*, is an *Obſcure Myſtery* (as I apprehend) to the Majority of *Geometricians*, who aſſert, *The* Area *and the* Side of the Square *Equal of a* Circle, *may be found, to the ten thouſand Part of Unity.* If there were no *Deficiency*

ency or *Fallacy* in their *Principals* or *Base Numbers*, I wou'd acquiesce with those *Assertors* ; but they have not yet sounded the Intricacy, therefore they have not found out the Riddle. If the *Proportions* were more contiguous, the *Principals* or *Base Numbers* wou'd be less ; consequently, the *Areas* of all *Circles* would be less ; *et vice versa*, if the *Proportions* were more remote : Notwithstanding the *Square Root* might be as nearly extracted as at present ; as may the *Root* of any *Irrational* or *Surd* Number.

But

But I will let these Men see the Ends for which I have undertaken this Task; and shall prove the Truth of it even to Demonstration. That a *Square* and a *Circle* may be commensurable, none but a Person devested of Reason and Sense will deny: Because it is obvious to every rational Person, *That two Bodies of different Forms may be of one Magnitude.* Consequently, a *Square* and a *Circle* may be of one *Magnitude.* If a *Square* and a *Circle* may be commensurable; from hence it must follow, *That a* Square *may be equal to any* Circle *of what Magnitude soever.*

Now,

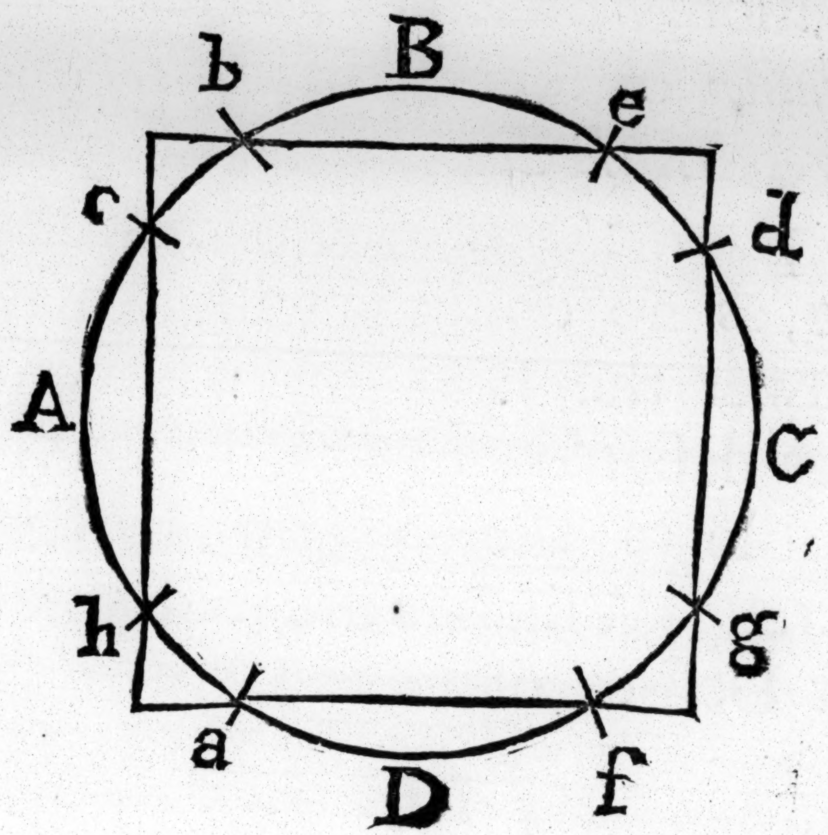
Now, ſuppoſe a *Square* and a *Circle* to be commenſurable; then an *Irrational* or *Surd* Number, whoſe *Root* cannot be expreſſed in *Rational Numbers*, becauſe there is no *Proportion* yet found between an *Irrational* or *Surd* Number and its *Root*: I ſay, An *Irrational* or *Surd* Number cannot be brought exactly into a *Square*, for the *Reaſon* above given; therefore an *Irrational* or *Surd* Number cannot be brought exactly into a *Circle*. If an *Irrational* or *Surd* Number could be exactly brought into a *Circle*, whereas it cannot be brought exactly into a *Square*; then a

a *Square* and a *Circle* could not be commenſurable : But to demonſtrate that a *Square* and a *Circle* cannot be commenſurable, is impoſſible.

So far as an *Irrational* or *Surd* Number can be brought into a *Square*, ſo far it may be brought into a *Circle* ; becauſe ſo far as the *Root* of an *Irrational* or *Surd* Number can be found, ſo far the *Diameter* of a *Circle* may be found, whoſe *Area* will be equal to the *Area* of the *Root*. Squaring a *Circle* Geometrically ; that is, with *Rule* and *Compaſs*, altho' as infallible as any *Rule* in *Geometry*, is now grown obſolete, as I apprehend , becauſe of the

Discordancy between that and the Numbers. However, as that Difference is now fully reconcil'd, I shall insert the Rule as followeth.

First draw a Circle *of any Width or Magnitude; then divide the* Circumference *into Four Equal Parts*, as A, B, C, D, *in this Figure, having your Compass at the same Extent you drew the* Circle: *Set one Point upon* A, *with the other bissect the* Circumference *at* a, *and* b; *do so from* B, *to* c, *and* d, &c. *Lines drawn through these Bissections will produce a* Square, *equal to the* Circle.



I ſhall not entertain the Reader with a longer Preface, knowing, this ſmall Volume will ſtand Proof.

If this my primary Performance ſhould meet with a favourable Reception, it would induce me to enlarge the next

Edition, with Rules for the *Menſuration* of ſeveral *Geometrical Figures*, or *Bodies*; which I omit at preſent, and conclude, wiſhing, as no doubt it will, it may anſwer the End for which it was deſign'd; that is, be ſerviceable to the Nation in General. Which is the profoundeſt Deſires of

Tho. Baxter.

Of a CIRCLE.

A *CIRCLE* is a round Body, or Figure, circumſcrib'd within a LINE, which is called the *Perephery* or *Circumference*; and the longeſt Line that can be drawn within a *Circle*, is called the *Diameter*. But I think it needleſs to dwell upon the Deſcription of the Form or Figure of a Circle; becauſe few *Students in Geometry* are ſo illiterate, but that they underſtand the Form and Figure of a *Circle*; and are in greater Want of *Rules*, whereby they may be inſtructed how to meaſure a *Circle*, than of the Deſcription of it. Therefore to proceed.

PROBLEM I.

By having the Diameter, *to find the* Circumference.

IF the *Diameter* of a *Circle* be *Unity*, or *One* ; the *Circumference* of that *Circle* will be 3.0625 ; therefore multiply 3.0625 by the *Diameter* of any *Circle*, the *Product* will be the *Circumference*.

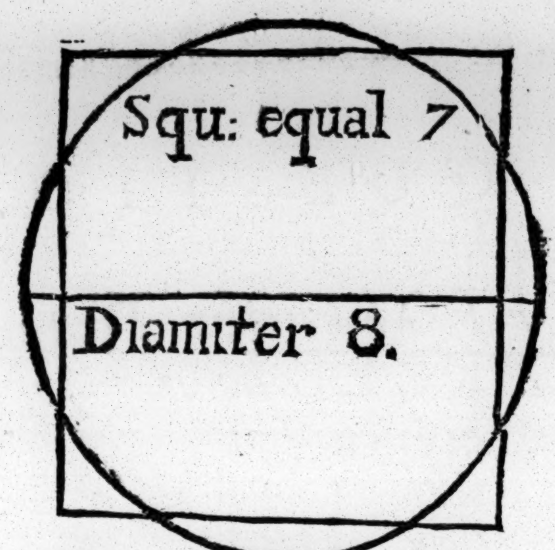
EXAMPLE. Suppose the *Diameter* of a *Circle* be 8, what is the *Circumference*, what is the *Area*?

Circum. 3.0625 Where the *Diameter* is *Unity*.
Diameter 8

24.5000 The *Length* of the *Circumference*.
12.25
4

49.00 The *Area*.
49
00 (7 The *Square Root*.

Square



Circumferen:24.5

Suppose the *Diameter* of a *Circle* be one, the *Square* equal is.875, which being substracted from the *Diameter*, the Remainder is .125 ; which being multiplyed by 8, will produce 1 the *Diameter* ; or if it be multiplyed by 7, it will produce .875 the Side of the *Square* equal : Which is a Demonstration beyond Contradiction, That if the *Diameter* of a *Circle* be 8, the Side of the *Square* Equal will be 7.

QUESTION.

QUESTION.

SUPPOSE *the* Diameter *of a* CIRCLE *be* 7.7, *what is the* Circumference ?

$$
\begin{array}{r}
3.0625 \\
7.7 \\
\hline
214375 \\
214375 \\
\hline
23.58125
\end{array}
$$

23.58125 The *Circumference*.

One Half of which being 11.790625, multiply'd into One Half of 7.7, which is 3.85, the Product will be 45.39390625, the *Area* of that *Circle*, whose *Diameter* is 7.7.

PROBLEM

PROBLEM II.

Having the Diameter *of a* Circle *only given, to find the* Superficial Content.

IF the *Diameter* of a *Circle* be One, the *Area* of that *Circle* is .765625. Now, as the *Square* of the *Diameter* of one *Circle* is to the *Area* of that *Circle*; so is the *Square* of the *Diameter* of any other *Circle* to the *Area* of that *Circle*.

QUESTION.

S*UPPOSE the* Diameter *of a* Circle *be* 8, *what is the* Area *of that* Circle? *The* Square *of* 8 *is* 64; *and the* Square *of* 1, *is* 1 : *Therefore I multiply* 64, *the* Square *of the* Diameter, *by* 765625, *the* Area *of that* Circle, *whose* Diameter *is* One; *and the* Product *is the* Area.

```
   765625
       64
  -------
  3062500
 4593750
 --------
 49.000000 The Area.
```

QUESTION.

SUPPOSE *the* Diameter *of a* Circle *to be* 7.7, *what is the* Area?

```
        7.7
        7.7
        ---
        539
       539
       ----
       5929
     765625
     ------
      29645
     11858
    35574
   29645
  35574
 41503
 ----------
 45.39390625 The Area.
```

QUE-

QUESTION.

SUPPOSE the Diameter *of a* Circle *be* $10\frac{2}{7}$, *what is the* Area?

Now, becauſe there is a *Fraction*, I multiply 10 by 7, adding 2, the *Numerator*, which makes 72; which I multiply into itſelf, and that Product by 765625, then divide this laſt Product by 49, the *Square* of 7, the *Denominator*, the *Quotient* is the *Area*.

$10\frac{2}{7}$)	765625
	5184
72)	
72)	3062500
	6125000
144)	765625
504)	3828125
5184)	
49)	3969.000000
	392 (81 The *Area*.
	0049
	49
	00

PROBLEM III.

Having the Diameter, *to find the* Square Equal.

IF the *Diameter* of a *Circle* be 8, the *Square Equal* will be 7; therefore as 8 is to 7, ſo is the *Diameter* to the *Square Equal.*

EXAMPLE. Suppoſe the *Diameter* of a *Circle* be be $10\frac{2}{7}$, what is the *Square Equal ?* Now, becauſe there is a *Fraction*, I multiply 10, the whole Number, by 7 the *Denominator*, to which I add 2, the *Numerator*, which makes 72, which I multiply by 7, and divide the *Product* by 8, and divide that *Quotient* by 7 : This laſt *Quotient* is the Length of the *Square Equal* to that *Circle* whoſe *Diameter* is $10\frac{2}{7}$.

$10\frac{2}{7}$

———

72

7

———

8)504(63, divide 63 the *Quotient* by
48 7, and the *Quotient* will be
——— 9, the Side of the *Square*
24 *Equal.*
24
———
00

QUESTION.

S*UPPOSE the* Diameter *of a* Circle *by* 7.7, *what is the Side of the* Square Equal ?

```
     7.7
       7
    ----
8)539(6.7375
  48
  ----
   59
   56
   ----
    30
    24
    ----
     60
     56
     ----
      40
      40
      ----
      00
```

The Length of the *Square Equal.*

N. B. If the *Diameter* of a *Circle* be 1, the Side of the *Square Equal* will be .875; therefore if you multiply the *Diameter* by .875, the Product will be the Side of the *Square Equal.* This Rule is so plain and obvious, I think it needless to give an Example.

PRO-

PROBLEM IV.

Having the Square Equal, *to find the* Diameter.

THIS is but the *Converse* of the last *Problem*: For whereas, in the last *Problem*, you were taught to multiply by 7, and divide by 8; here you are to multiply by 8, and divide by 7.

EXAMPLE. The Side of the *Square Equal* of the former *Circle* is 6.7375, what is the *Diameter*?

As 7 is to 8, so is the Side of the *Square Equal* to the *Diameter*.

```
    6.7375
         8
  ---------
7)53.9000(7.7 Which is the Length
  49              of the Diameter.
  --
   49
   49
   --
   00
```

QUE-

QUESTION.

SUPPOSE the Square Equal *be* 9, *what is the* Diameter ?

$$\begin{array}{r} 9 \\ 8 \\ \hline 7)\,72\,(\,10\tfrac{2}{7} \\ 7 \\ \hline 02 \end{array}$$

The Length of the *Diameter.*

To find the *Area*, where the *Diameter* of a *Circle* is $10\frac{2}{7}$; First, multiply 10 the whole Number by 7 the *Denominator* : Add 2, the *Numerator*, which will make the Sum 72 : Multiply 3.0625 by 72, divide the Product by the *Square* of the *Denominator*, viz. 49. Multiply half the *Quotient* by the half of 72, *viz.* 36, the Product is the *Area* of that *Circle* whose *Diameter* is $10\frac{2}{7}$. Behold the Work.

$10\frac{2}{7}$

$10\frac{2}{7}$	3.0625		225	Half of the *Circumference.*
72	72		36	
	61250		1350	
	214375		675	
49)	220.5.000 (45		81.00	The Area.
	196			
	0245			
	245			
	000			

PROBLEM V.

Having the Square Equal, *to find the* Circumference.

IF the *Square Equal* be *Unity*, or *One*, the *Circumference* will be 3.5 : Therefore as 1 is to 3.5, so is the *Square Equal* to the *Circumference.* As 1 does neither multiply nor divide, hence it follows, That if you multiply the *Square Equal* by 3.5, the *Product* will be the *Circumference.*

Example. If the *Side* of the *Square Equal* be 6.7375, what is the *Circumference?*

$$\begin{array}{r} 6.7375 \\ 3.5 \\ \hline 336875 \\ 202125 \\ \hline 23.58125 \end{array}$$

The Length of the *Circumference.*

QUESTION.

IF *the Side of the* Square Equal *be* 9, *what is the* Circumference?

3.5

9

31.5 The Length of the *Circumference.*

PROBLEM VI.

Having the Circumference, *to find the* Diameter.

MUltiply the Circumference by 16, divide the Product by 49, the Quotient is the Diameter.

EXAMPLE. Suppose the Circumference of a Circle be 23.58125, what is the Diameter?

```
        23.58125
              16
      ----------
        14148750
        2358125
      ----------
        377.30000

49 ) 377.3 ( 7.7  The Length of the
     343               Diameter.
     ---
     343
     343
     ---
     000
```

QUESTION.

IF *the* Circumference *of a* Circle *be* 31.5, *what is the* Diameter ?

$$
\begin{array}{r}
31.5 \\
16 \\
\hline
1890 \\
315 \\
\hline
\end{array}
$$

$$
\begin{array}{l}
49\ )\ 504.0\ (\ 10\tfrac{14}{49}\ \text{The Diameter.} \\
49 \\
\hline
014
\end{array}
$$

Abbreviate the Fraction, *i. e.* Divide both the *Numerator* and *Denominator* by 7, and you'll have $10\frac{2}{7}$ for the *Diameter*, as in the 4th Problem. The Reader, perhaps, may have ſome Trouble to find out the Reaſon of the Diſcordancy between the *Circumference* here ſuppoſed, and the 4th *Problem*, where the *Diameter* is the ſame as here. But obſerve the following Sollution : If I had divided 220.5 by 7, the *Denominator* of the *Fraction*, the *Quotient* would have been 31.5 as above, (which is the exact Circumference) but then I muſt have divided the laſt *Product* by 7, to find the *Area*. However, I ſhall inſert the *Queſtion* as followeth, wrought both Ways.

$10\frac{2}{7}$ 3.0625

72   72

61250

214375

49) 220.5000 (4.5

196   2.25

36

245

245   1350

675

000

81.00 The Area.

****

3.0625

72

61250

214375

7) 220.5000 (31.5

21   15.75

36

10

7   9450

4725

35

35   7) 567.00 (81 *Area.*

56

00

007

N. B. Where a Number is propofed, that will neither divide exactly by 49, nor

nor the Fractions by 7, it is *Irrational*; therefore its *Diameter* cannot be exactly found. A *Diameter* may be found, whose Circumference will be as near the proposed Number, as any *Rational* Number can come, or be near, to an *Irrational* Number.

QUESTION.

SUPPOSE the Circumference *of a* Circle *be* 48, *what is the* Diameter, *what is the* Area?

```
   48                          3.0625  Circumference of 1, the Diam.
   16                          15.6734 The Diameter.
  ---                          -------
  288                          122500
   48                          91875
49)768(15.6734 Dia.           214375
       49                     183750
       --                     153125
       278                   30625
       245                   -----------
       ---                   47.99978750
        330                   2399989375  Semicircumfer.
        294                        78367  Semidiameter.
        ---                  -------------
        360                  16799925625
        343                 14399936250
        ---                 7199968125
         170               1919991500
         147               16799925625
         ---               ----------------
          230              188.0799673506250  Area.
          196
          ---
           34
```

Whose *Square Root* is 13.714225: Which might have been brought nearer the Truth by finding the Diameter to a greater Length. To demonstrate the Matter more fully, behold the following Work.

48, the *Circumference.*	$15\frac{33}{49}$
16	768
———	
288	384 *Semidiameter.*
48	24 *Semicircumference.*
———	———
	1536
49)768($15\frac{33}{49}$ *Dia.*	768
49	———
———	49)9216($188\frac{4}{49}$ *Area.*
278	49
245	———
———	431
33	392
	———
	396
	392
	———
	4

If a *Square* were proposed, whose Side was $13\frac{5}{7}$, (or the like) it would be impossible to find the exact *Area*, without *Fractions*, to remain; because it is an *Irrational Number*, notwithstanding an *Irrational Diameter* and *Circumference* must belong to an *Irrational* Number. As no *Number* can be brought into a *Square* but what

what may be brought into a *Circle*, nor no Number can be brought into a *Circle* but what may be brought into a *Square* (by my *Proportions)*; it must either be allowed, That *Mine* are *Due Proportions*; or else be demonstrated, That a *Square* and a *Circle* cannot be commensurable; the which is impossible.

PROBLEM VII.

Having the Circumference, *to find the* Square Equal.

THIS is the Converse of the Fifth Problem: Whereas multiplying the *Square Equal* by 3.5, found the *Circumference*; it must follow, that Dividing the *Circumference* by 3.5, will find the Side of the *Square Equal*.

EXAMPLE. Suppose the Circumference of a *Circle* be 31.5, what is the Side of the *Square Equal*?

3.5) 315 (9 The Side of the *Square Equal*.
315

000

QUESTION.

SUPPOSE the Circumference *of a* CIRCLE *be* 3.5)

3.5)23.58.125(6.7375 The Side of the *Square Equal.*

```
3.5)23.58.125(6.7375
    210
    ---
     258
     245
     ---
      131
      105
      ---
       262
       245
       ---
        175
        175
        ---
        000
```

QUESTION.

SUPPOSE the Circumference *be* 24.5, *what is the* Square Equal?

3.5) 245 (7 The Side of the *Square Equal.*

```
3.5 ) 245 ( 7
      245
      ---
      000
```

PROBLEM VIII.

Having the AREA, *to find the* Circumference.

AS the Square of the Circumference of one Circle, is to the Area of that Circle; so is the Square of the Circumference of any other Circle, to the Area of that Circle.

If

If the Area of a Circle be 1, the Square of the *Circumference* will be 12.25 : Therefore as 1 is to 12.25, ſo is the Area to the *Square* of the *Circumference.*

EXAMPLE. Suppoſe the Area of a *Circle* be 81, what is the *Circumference?*

```
  12.25
     81
  -----
   1225
  9800
  -----------
  992.2.5.( 31.5 The Circumference.
  9
  ---
  092
   61
  ----
  3125
   625
  3125
  ----
  0000
```

QUESTION.

SUPPOSE *the* Area *of a* Circle *be* 45.39390625, *what is the* Circumference?

```
                 45·39390525
                        1225
                 ___________
                 22696953125
               9078781250
             9078781250
           4539390625
           _______________
           55607535 15625
_________________________________________
556.07·53·51.56.25.( 23.58125 The
4                          Circumference.
__
156

 43
129
____
 2707

  465
 2325
 ____
  38253

   4708
  37664
  _____
   58951

   47161
   _______
    1179056

     471622
     943244
     _______
     23581225

     4716245
     23581225
     ________
     00000000
```

P R O-

PROBLEM IX.

Having the Area*, to find the* Diameter.

MUltiply the *Area* by 64, extract the *Square Root* of that Product, divide the *Root* by 7, the *Quotient* is the *Diameter*.

EXAMPLE. Suppose the *Area* of a *Circle* be 45.39390625, what is the *Diameter* ?

```
     45.39390625
              64
   -------------
    18157562500
   27236343750       Root.
   -------------
  290521000000(7(539(7.7  The
 25                 49    Diameter.
 --                 --
 405                49
 103                49
 309                --
 ---                00
   9621
    1069
    9621
    ----
    0000
```

QUESTION.

SUPPOSE the Area *of a* Circle *be* 81, *what is the* Diameter ?

81		
64		
324		
486	*Root.*	
5184	(7 (72 (10 $\frac{2}{7}$ The *Diameter.*	
49	7	
284	02	
142		
284		
000		

PROBLEM X.

Having the Circumference, *to find the* Area.

THis is Converſe of the 8th *Problem.* If the *Square* of the *Circumference* of a *Circle* be 1225, the *Area* is 1 : Therefore as 12.25 is to 1, ſo is the *Square* of the *Circumference* of any *Circle* to its *Area.*

EXAMPLE. Suppoſe the *Circumference* be 23.58125, what is the *Area* ?

23.58125
23.58125
11790625
4716250
2358125
18865000
11790625
7074375
4716250

12.25) 556075.3515625 (45.39390625
The *Area.*

4900
6607
6125
4825
3675
11503
11025
4785
3675
11101
11025
7656
7350
3062
2450
6125
6125
0000

QUESTION.

SUPPOSE *the* Circumference *be* 31.5, *what is the* Area ?

```
     315
     315
    ----
    315
    575
   945
  ------
1225 ) 99225 ( 81 The Area.
       9800
       ----
       1225
       1225
       ----
       0000
```

I shall so far oblige the Curious, as to give Rules for finding the Side of the Square *Inscrib'd*, and the Side of the Square *Inscribing*, tho' not exactly ; because it is impossible to find the *Hypothenusal* or *Subtending* Line (*exactly*) of a *Right Angled Triangle*, when the Sum or Length of the Legs are equal. Neither has it any Relation to the findng the just *Area* of a *Circle*.

PRO-

PROBLEM XI.

Having the Diameter, *to find the* Side *of the* Square Inscrib'd.

IF the *Diameter* of a *Circle* be 1, the Side of the *Square Inscrib'd* will be 707107: Therefore as 1 is to 707107, so is the *Diameter* to the *Square Inscrib'd.*

EXAMPLE. If the *Diameter* of a *Circle* be 7.7, what is the Side of the *Square Inscrib'd?*

707107
77
4949749
4949749
5.4447239 The Side of the *Square Inscrib'd.*

PROBLEM XII.

Having the Circumference, *to find the Side of the* Square Inscrib'd.

IF the *Circumference* be 1, the Side of the *Square Inscrib'd* will be 230892: Therefore as 1 is to 230892, so is the *Circumference* to the *Square Inscrib'd.*

QUE-

QUESTION.

IF *the* Circumference *of a* Circle *be* 2358125, *what is the* Square Inſcrib'd ?

230892
—————
4716250
21223125
18865000
7074375
4716250
—————
5.44472197500 The Side of the *Square Inſcrib'd.*

✱✱

PROBLEM XIII.

Having the Side of the Square Equal, *to find the* Side *of the* Square Inſcrib'd.

IF the Side of *Square Equal* be 1, the Side of the *Square Inſcrib'd* will be 808122 : Therefore as 1 is to 808122, ſo is the Side of the *Square Equal* to a *Circle*, to the Side of the *Square Inſcrib'd* within a *Circle.*

EXAMPLE.

EXAMPLE. If the Side of the *Square Equal* of a *Circle* be 6.7375, what is the Side of the *Square Inſcrib'd?*

```
      6.7375,
      808122
      ------
      134750
     134750
    67375
   539000
539000
-----------------
5.444721975 0 The Side of the Square Inſcrib'd.
```

PROBLEM XIV.

Having the Side of a Square, *to find the* Diameter *of a* Circle, *that will circumſcribe that* Square.

If the *Side* of a *Square* be 1, the *Diameter* of a *Circle* to circumſcribe that *Square* will be 1.4142: Therefore as 1 is to 1.4142, ſo is the Side of a *Square* to the *Diameter* of a *Circle* that will circumſcribe that *Square*.

EXAMPLE. Suppose the Side of a *Square* be 5.444721975, what is the *Diameter* of a *Circle* that will circumscribe that *Square*? Behold the Work as followeth.

```
      5.444721975
           1.4142
     ------------
      10889443950
     21778887900
    5444721975
   21778887900
   5444721975
   --------------
   76.99925817045
```

76.99925817045 The Length of the *Diameter*.

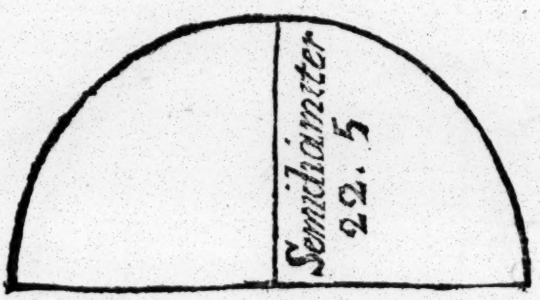
To find the Area *of a* Semicircle.

It may be performed two Ways. *i. e.* You may either find the *Area* of the whole *Circle*, as hath been already taught, $\frac{1}{2}$ of which is the *Area* of the *Semicircle*: Or multiply 3.0625 by the *Semidiameter*, $\frac{1}{2}$ of that Product multiplied by the *Semidiameter* is the *Area*.

EXAM-

EXAMPLE. Suppose the *Semi-diameter* be 22.5, what is the *Area?*

```
      3.0625
        22.5
    --------
      153125
     61250
    61250
    --------
    6890625
    34453125
         225
    ----------
    172265625
   68906250
  68906250
  -----------
  775.1953125 The Area.
```



I shall omit giving an Example the other Way, because it differs no-

thing from what has been ſpoken, of the Menſuration of *Circles*, ſave dividing the Product by 2, the Quotient is the *Area* of a *Semicircle.*

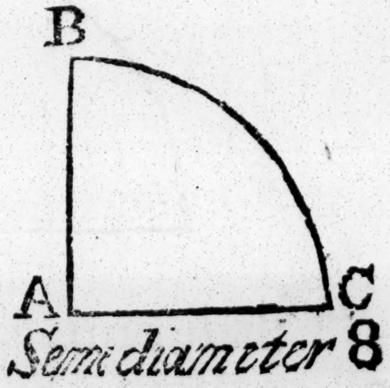
Of a QUADRANT.

THE *Area* of a *Quadrant*, or fourth Part of a *Circle*, may be thus found.

Multiply 1.53125 by the *Semidiameter*, divide the Product by 2, multiply the Quotient by your former Multiplicator : This laſt Product is the *Area* of the *Quadrant.*

EXAMPLE. Let *A, B, C,* be a *Quadrant*, or fourth Part of a *Circle*, whoſe *Radius* or *Semidiameter* is 8; what is the *Area* ?

```
1.53125
      8
-------
1225000
 612500
      8
-------
49.000000 The Area.
```

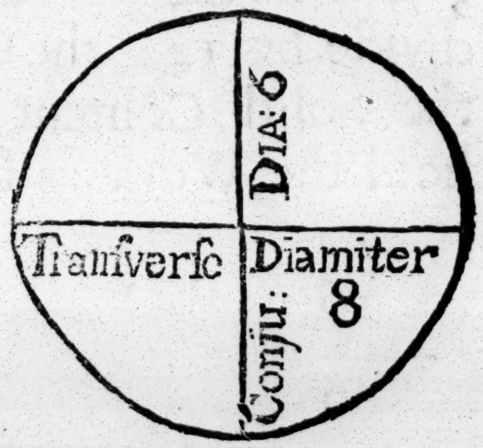


Of

Of an ELLIPSIS.

AN *Ellipsis*, or *Oval*, is a Figure bounded by a *Regular Curve Line* returning into itself; but of its two *Diameters* cutting each other in the *Centre*, one is longer than the other, in which it differs from the *Circle*. To find the *Area* this is the Rule: Multiply the *Tranverse Diameter* by the *Conjugate*: Multiply that Product by 765625. This last Product is the *Area* of the *Ellipsis*, or *Oval*.

EXAMPLE. If the *Transverse Diameter* of an *Oval* be 8, and the *Conjugate Diameter* 6, what is the *Area*?




```
 8     765625
 6         48
--   -------
48    6125000
     3062500
     -------
36.750000 Area.
```

Of a CONE.

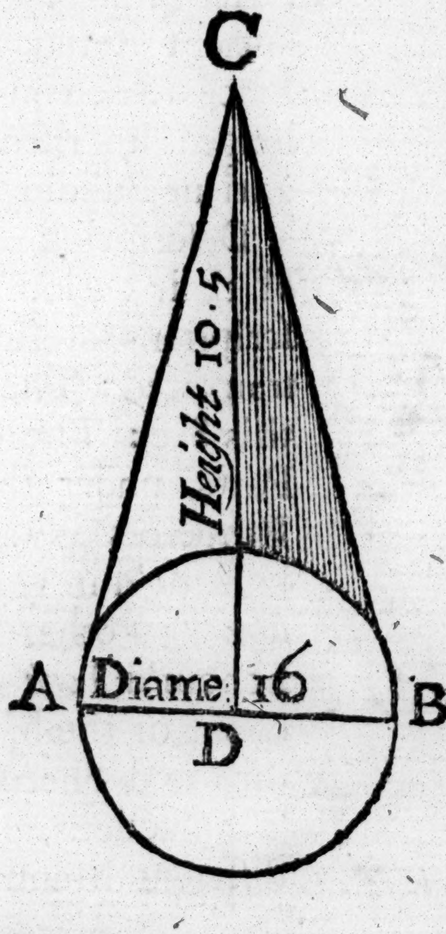
A *Cone* is a Solid, having a *Circular Base*, and growing smaller and smaller, 'till it ends in a Point, which is called the *Vertex*, and may be nearly represented by a *Sugar Loaf*. To find the Solidity, this is the Rule: Multiply the *Area* of the *Base* by a third Part of the *Perpendicular Height*, the Product is the Solid Content. Thus let *A*, *B*, *C*, be a *Cone*, the *Diameter* of whose Base *A*, *B*, is 16 Inches, and the Height of the Cone *D*, *C*, is $10\frac{1}{2}$ Feet: First, Square the *Diameter* 16, and it is 256; which multiply by 765625, and the Product is 196; which multiply by a third Part of the Height, *viz.* 3.5, and the Product is 686; which divide by 144, the Quotient is $4.763\frac{8}{9}$, the Solid Content of the *Cone*. Behold the Work as below.

$$
\begin{array}{r}
16 \\
16 \\
\hline
96 \\
16 \\
\hline
256
\end{array}
$$

256 Square of the *Diameter*.

```
  765625
    .256
 -------
 4593750
3828125
1531250
 -------
196.000000 Area of the Base.

   3.5 A third Part of the Height.
  ----
  980
 588
 -----
144)686.0(4.763 8/9 { The Content of the Cone.
    576
    ----
    1100
    1008
    ----
      920
      864
      ---
       560
       432
       ---
       128
```



FINIS.

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